

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Reliability and Continuity of)	PS Docket No. 11-60
Communications Networks, Including)	
Broadband Technologies)	

COMMENTS OF VERIZON

Verizon has previously detailed for the Commission and the public its network reliability and service restoration efforts and challenges during the 2017-2018 hurricane and wildfire seasons.¹ The lessons learned during those seasons show that signatories to the Framework² should ensure that it remains a living document relevant to consumers’ needs for reliable service during and after disasters. That same experience, though, also shows how the Framework enables a wireless provider to learn from a disaster and nimbly adapt its practices to the next disaster’s unique challenges. The signatories should convene to consider the industry’s experience during the 2017-2018 hurricane and wildfire seasons, and how best to adapt the Framework based on lessons learned—while preserving service providers’ ability to respond flexibly to a disaster’s particular circumstances and challenges.

¹ See Verizon Comments, PS Docket No. 11-60 (Feb 8, 2019); Verizon Comments, PS Docket No. 18-339, at 3-17 (Dec. 17, 2018); Verizon Letter, PS Docket No. 11-60 (Nov. 26, 2018); Verizon Comments, PS Docket No. 17-344 (Jan. 22, 2018); *see also* Opening Comments of MCIMetro Access Transmission Services and Cellco Partnership, *Order Instituting Rulemaking Regarding Emergency Disaster Relief Program*, Cal. Pub. Util. Comm’n, R.18-03-011 (Feb. 19, 2019).

² See Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, from CTIA, AT&T, Sprint, T-Mobile and Verizon, PS Docket Nos. 11-60 and 13-239 (Apr. 27, 2016) (the “Framework”).

I. FRAMEWORK SIGNATORIES SHOULD CONVENE TO CONSIDER LESSONS LEARNED DURING THE 2017-2018 HURRICANE AND WILDFIRE SEASONS.

Improving network reliability and disaster recovery efforts is necessarily an iterative process. Every disaster poses unique challenges based on its severity, geography, and a provider's available resources, and no network can be completely impervious to a major disaster's impact. But when an individual disaster reveals previously unseen vulnerabilities in a provider's network or gaps in its practices, it should refine its practices to mitigate the likelihood the same problem will reoccur. The same approach should apply to the Framework to ensure that it remains a living, relevant document.

Wireless providers' experience in working together with one another and with wireline service providers, electric utilities, state, local and Federal emergency management agencies, will inform this process. The Commission's re-chartering of the Broadband Deployment Advisory Committee's Disaster Recovery Working Group is an important next step in this regard. After the close of this comment cycle and the Working Group has completed its recommendations, the signatories will have a comprehensive record when they convene that will enable them to reassess the Framework in a meaningful way.

Also, a more formal process for monitoring both service provider and local government implementation makes sense (though the Framework need not be modified to achieve this goal).³ The Commission should work with the signatories to develop an annual confidential information request using a standard set of questions eliciting information on how a signatory applies the Framework to its operations and practices throughout the prior year, irrespective of whether an

³ See Public Notice at 7.

ESF-2 event occurs during that period.⁴ This will address the Commission's justifiable interest in monitoring the Framework's effectiveness. And a more formal process for reassessing the Framework every few years (e.g., triennially) could enable signatories to maintain its relevance.

II. UNTIL THE INDUSTRY FULLY COMPLETES ITS TRANSITION FROM LEGACY 2G AND 3G NETWORKS, PROVIDERS SHOULD ADOPT DISASTER-SPECIFIC PROCESSES TO MORE QUICKLY ENABLE DISASTER-SPECIFIC ROAMING.

The 2017-2018 hurricane season coincided with the wireless industry's transition from different legacy 2G and 3G networks, services and devices, to what will ultimately be all-IP-enabled 4G (and soon 5G) wireless networks, services and devices. This transition will be transformative, but in the near term many service providers and their customers will continue to rely on legacy technologies that are not compatible with one another. In each emergency situation, operators must evaluate the potential negative impact on their entire customer base which may need to shift to a new roaming technology.⁵ Even where devices have capabilities to operate across multiple technologies (e.g., CDMA, GSM/UMTS and LTE), substantial numbers of devices onto roaming partner networks utilizing different technologies will continue to present operational complexities. For example, in the case of Hurricane Michael, Verizon needed to enable tens of millions of devices that normally roam using CDMA to roam on GSM/UMTS networks. While Verizon regularly tests roaming using various devices, questions will arise as to how this might affect user-experience across our entire customer base for a given disaster event. As discussed below, however, even in these circumstances wireless providers can take a number

⁴ See Verizon Comments, PS Docket No. 11-60, at 2-4 (July 16, 2018)

⁵ For this and other reasons, Commission policy should continue to focus on wireless providers building out resiliency in their own networks.

of measures to expedite the availability of disaster-based roaming to consumers where technically feasible.

The transition to unified network technologies, such as 4G LTE, across all service providers will address many but not all of these technical challenges. For example, both service providers in a roaming arrangement will also need the ability to clearly and quickly define the disaster-affected area in which roaming will be enabled. This is necessary to minimize any adverse impact outside the affected area, including on the requesting provider's customers and on the inbound provider's network capacity. And, of course, the inbound provider will always need to assess whether its network has the capacity to handle additional roaming traffic, as well as the impact on its public safety customers.

Verizon's experience reflects that wireless providers are capable of at least partially overcoming many of these obstacles and, in cases where Verizon determines that outbound roaming should be implemented, we have adopted a practice of implementing such roaming within 24 hours of such a decision. There are also a number of additional practices providers could use to flesh out the Framework's roaming commitment, without necessarily expanding the Framework itself. While there is no one-size-fits-all approach, each service provider should have its own company-specific decision-making process and criteria for either requesting or accepting disaster-based roaming. These could include, for example, establishing dedicated points of contact among the Framework signatories, and standardized checklists for requesting, approving and implementing disaster-based roaming. And relevant criteria for invoking disaster-based roaming could include factors such as the actual coverage loss (rather than simply sites out of service), the expected service restoration time, projected capacity demands, and users' access to the affected area. Each of these factors were reflected in our Hurricane Michael recovery

efforts, and we have already refined and strengthened them to incorporate the lessons learned during that event.

And the Commission could confirm a provider's adoption, maintenance, and application of these practices through the annual reporting process discussed above. A numerical-based metric, however, would be misleading for reasons previously discussed.⁶ For example, answering "zero" to the numerical metrics suggested in the *Public Notice* (i.e. the percentage of customers covered by roaming agreements or calls completed due to roaming agreements) could erroneously suggest that a provider failed to meet that commitment. A numerical-based metric would also unfairly suggest that the roaming commitment is not met even when roaming is technically infeasible due to different providers' incompatible technologies.

III. BROADER STATE AND LOCAL GOVERNMENT ENGAGEMENT IN DISASTER PLANNING WILL IMPROVE LOCAL PREPAREDNESS AND CONSUMER READINESS.

As Verizon has previously explained, the 2017-2018 hurricane and wildfire events illustrated that an important factor in effective coordination between providers and a local government's disaster recovery efforts is often the state government emergency management agency's own support and coordination of those local government efforts.⁷ One issue signatories should consider is whether the Framework could better reflect the role of state government agencies in coordinating disaster recovery efforts among their political subdivisions. The Framework recognized that a local government's ability to participate in the Framework could be limited due to fiscal, personnel, and equipment constraints, and incorporating state emergency

⁶ See Public Notice at 4; Verizon July 2018 Comments at 2-3.

⁷ See Verizon December 2018 Comments at 19-20.

management agencies' role more explicitly in the Framework might better reflect the state-local government relationship here. And the Commission and state and local government stakeholders, in turn, should separately consider criteria to assess when the use of local-level Emergency Operations Centers is viable and appropriate.

In all events, the Framework also should continue to preserve wireless providers' ability to determine, based on sound engineering principles and objective factors like available coverage and traffic demands, where and how to allocate their assets and services in a locality to most effectively and efficiently respond to a disaster. For example, Verizon used deployable backup systems extensively during the 2017-2018 hurricane and wildfire disasters.⁸ Maintaining resources such as Satellite Pico Cell on a Trailer (SPOTs), Cell on Wheels (COWs), eFEMTOS (indoor cell sites) and other deployable resources, as well as spare fiber components available for use during and after disasters improves service restoration time while enabling providers to focus resources on areas where those assets will prove most effective.⁹ Some state governments, however, are considering regulation that would purportedly authorize them to direct assets to particular areas.¹⁰ Putting aside the question of whether states have such authority in the first place, such an approach risks diverting assets from where consumers need them to areas where a state or locality erroneously perceives the need for additional capacity, to consumers' detriment.

⁸ See *supra* note 1.

⁹ See *Public Notice* at 8; Verizon December 2018 Comments at 5, 9, and 14.

¹⁰ See, e.g., Cal. Pub Util. Comm'n, *Order Instituting Rulemaking Regarding Emergency Disaster Relief Program*, Decision 18-08-004, at 9 (Aug. 22, 2018) ("direct[ing] all facilities-based wireless telephone corporations to provide ... Deployment of mobile equipment, including Cells on Wheels and Cells on Light Trucks, to supplement service in areas that need additional capacity to ensure access to 911/E911 service [and] Provide WiFi access in areas where impacted wireless customers seek refuge from fires.").

The population-based formula suggested in the *Public Notice* would have the same result.¹¹ After Hurricane Harvey in 2017, for example, Verizon needed to use very few deployable assets to maintain and restore service for customers in heavily populated Harris County, Texas, where Houston is located. Many of the much smaller counties along the Texas Gulf coast, however, experienced more significant coverage loss. Compelling service providers to hold assets in reserve for Harris County, when more might have been needed in the less-populated counties, would have served no one's interest. Likewise, after Hurricane Michael, Verizon was free to nimbly redirect deployable assets from the areas of North Carolina and South Carolina hit by Hurricane Florence and elsewhere to the hardest hit areas of Gulf County and Bay County, Florida, rather than hold them in reserve for more populous areas like Tallahassee and Tampa-St. Petersburg, or keep them in the Wilmington, North Carolina area. In addition, those assets are typically housed at more centralized staging areas *away* from the disaster areas precisely in order to quickly allocate them where needed. And the fact that Verizon used many deployable assets to serve consumers and public safety customers in remote, less populated areas hit by wildfires in California illustrates the shortcomings of such an approach.

IV. STAKEHOLDERS CAN IMPLEMENT ADDITIONAL MEASURES WITHOUT REVISITING THE FRAMEWORK.

Public Awareness of Service and Restoration Service. The *Public Notice* focuses on improving awareness of service restoration efforts by expanding the public disclosure of data submitted through the Commission's DIRS reporting process.¹² Verizon supported the

¹¹ See *Public Notice* at 8.

¹² *Public Notice* at 6-7.

Commission's DIRS recent changes, but is already taking steps independent of the Framework to address this issue. For example, beginning with Hurricane Florence in September 2018, Verizon established a practice of maintaining a dedicated website for a specific disaster event (where feasible), which we also used for Hurricane Michael and the Camp Wildfire in California.¹³ Verizon and other wireless providers recently voluntarily entered into an agreement with the Metropolitan Washington Council of Governments to notify PSAPs in those jurisdictions of significant 911- and non-911 wireline and wireless service outages. And we are actively considering additional methods of providing customers with actionable information about service outages, in a targeted manner that will not overwhelm them with information and result in "notification fatigue," or otherwise disclose security-sensitive information.

Mutual Aid. Verizon and other wireless providers have previously detailed numerous instances of mutual aid or assistance between wireless providers and between wireless and wireline providers.¹⁴ The spirit of cooperation between service providers' disaster recovery

¹³ See <https://www.verizon.com/about/news/hurricane-florence-networkupdates>, <https://www.verizon.com/about/news/verizon-offers-freecalling-text-and-data-georgia-north-carolina-south-carolina-andvirginia>, <https://www.verizon.com/about/news/verizon-offer-freecalling-text-and-data-customers-impacted-hurricane-florence-nowcategory-4>, and <https://www.verizon.com/about/news/verizon-readyserve-our-customers-community-hurricane-florence-threatens-us> (Hurricane Florence); <https://www.verizon.com/about/news/hurricane-michael-networkupdates>, <https://www.verizon.com/about/news/verizon-wirelessservices-and-running-panhandle-dont-cut-fiber>, <https://www.verizon.com/about/news/verizon-provides-1-millionred-cross-and-florida-relief-fund-hurricane-michael-relief>, <https://www.verizon.com/about/news/update-verizon-offers-freecalling-text-and-data-customers-impacted-hurricane-michael>, and <https://www.verizon.com/about/news/verizon-offer-free-callingtext-and-data-customers-impacted-hurricane-michael-nowforecasted-be> (Hurricane Michael); and <https://www.verizon.com/about/news/california-wildfire-networkupdates> (Camp Wildfire).

¹⁴ See, e.g., Verizon November 2018 Letter at 3-7; Sprint December 2018 Comments at 7-8; CTIA December 2018 Comments at 13-14; CTIA July 2018 Comments at 11-12.

activities that the Framework has encouraged already serves its purpose and there is nothing in the record to suggest this commitment is not working. To monitor signatories' performance of this commitment, the Commission need only ask, in the annual questionnaire Verizon recommends above, whether any signatory was denied a request for mutual aid and, if so why.

CONCLUSION

For the foregoing reasons, the Framework signatories should convene discussions after the BDAC Working Group completes its work to consider how best to incorporate lessons learned during the 2017-2018 hurricane and wildfire seasons into the Framework.

Respectfully submitted,

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